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NEW AND RARE SPECIES OF NORTH AMERICAN FUNGI.

(Sphærospideæ.)

By J. B. ELLIS and B. M. EVERHART.

PHYLLOSTICTA PYROLÆ, n. s. On living leaves of *Pyrola rotundifolia*, Centreville, Del., July, 1873. A. Commons, 906. Spots amphigenous reddish brown, orbicular with a narrow, slightly raised margin, $1\frac{1}{2}$ –2 millimeters in diameter. Perithecia epiphyllous, erumpent, globose, 100 – 112μ in diameter. Sporules ovate-globose, hyaline, 5 – 6μ in the longest diameter.

PHYLLOSTICTA HUMULI, Sacc. & Speg. var. MAJOR, E. & E. On hop leaves, Iowa, June, 1889, A. S. Hitchcock. Differs from the type in its larger (12 – 16μ) sporules. Spots dull rusty white, becoming whiter, 2 – 3 millimeters in diameter, suborbicular, with a narrow, raised border. Perithecia epiphyllous, innate, yellowish, (80 – 90μ). Sporules 12 – 16 by 4 – 5μ with 1 – 3 nuclei.

PHYLLOSTICTA RHEI, n. s. On *Rheum officinale*, Newfield, N. J., August, 1889. Spots mostly marginal, subconfluent, large (1 – 2 centimeters), rusty brown, concentrically zoned, either with or without a definite, slightly darker limiting line, around which is a broad border of light yellow. Perithecia innate, visible on both sides of the leaf and slightly prominent, rather large (100 – 150μ), not abundant. Sporules oblong-elliptical, 2-nucleate, rounded at the ends, hyaline, 5 – 7 by 2 – $2\frac{1}{2}\mu$, resembling the sporules of some *Phoma*.

PHYLLOSTICTA VARIEGATA, n. s. On leaves of *Fraxinus*, London, Canada, July, 1889. J. Dearness, 519. Spots numerous, angular, pale yellow, 1 – 3 millimeters in diameter, with a definite, narrow, darker margin. Perithecia epiphyllous, lenticular, black, 90 – 100μ . Sporules ovate or elliptical 4 – 5 by $1\frac{1}{2}$ – 2μ . *Phyllosticta fraxini*, E. & M., which is doubtfully distinct from *P. fraxinicola*, Curr., has larger sporules (5 – 7 by 3μ) and larger darker spots. *P. viridis*, E. & K., is also quite different from this.

PHYLLOSTICTA MACLURÆ, n. s. On leaves of *Maclura aurantiaca*, Newfield, N. J., August, 1889. Spots dark red-brown, subirregular and subindefinite, often marginal and confluent, $\frac{1}{4}$ to 1 centimeter in diameter. Perithecia epiphyllous, prominent, $\frac{1}{8}$ millimeter in diameter. Sporules ovate-oblong or fusoid-oblong 2 – 4 -nucleate 10 – 12 by 3μ .

PHYLLOSTICTA CALAMINTHÆ, n. s. On *Calamintha clinopodium*, London, Canada, August, 1889. J. Dearness, 372. Spots amphigenous, definite, round 1 – 2 millimeters in diameter, nearly black, becoming whitish, thin. Perithecia few lenticular, epiphyllous, pierced above, 80μ in diameter. Sporules elliptical, hyaline, 2-nucleate, $3\frac{1}{2}$ – $4\frac{1}{2}$ by 2 – $2\frac{1}{4}\mu$.

PHYLLOSTICTA HYDRANGEÆ, n. s. On leaves of *Hydrangea* (cult.). Spots $1\frac{1}{2}$ to 1 centimeter or more in diameter, rusty brown, with a nar-

row raised border, shaded with purple at first. Perithecia epiphyllous, lenticular, pierced above $100\text{--}115\mu$ in diameter. Sporules oblong, 2-3-nucleate, hyaline, $10\text{--}12$ by $2\frac{1}{2}\text{--}3\frac{1}{2}\mu$.

PHYLLOSTICTA ORONTII, E. & M. var. ADVENA, E. & E. On leaves of *Nuphar advena*, London, Canada, July, 1889. J. Dearness, 293 $\frac{1}{2}$. Spots subelliptical $1\text{--}1\frac{1}{2}$ centimeters, pale yellow, more or less concentrically wrinkled, with a narrow, definite, slightly raised border. Perithecia epiphyllous, innate, dark, slightly prominent, on a lighter colored, thinner, definitely margined spot in the center of the larger spot. Sporules oblong, $5\text{--}8$ by $2\frac{1}{2}\text{--}3\mu$, ends obtuse.

PHYLLOSTICTA HALSTEDII, n. s. On living leaves of *Syringa vulgaris*, New Brunswick, N. J., July, 1889. Dr. B. D. Halsted. Spots amphigenous; subrotund; red-brown; $\frac{1}{4}$ to $1\frac{1}{4}$ centimeters in diameter; concentrically wrinkled or zoned, with a definite, narrow, dark border. Perithecia few; lenticular $100\text{--}150\mu$, in diameter; innate; generally visible on both sides of the leaf. Sporules broad, fusoid-oblong, not curved; granular; $15\text{--}20$ by $5\text{--}7\mu$; ends rounded. The specimens of *Phyllosticta syringae*, West, in De Thümen's Mycotheca 1490 agree very well with the description in Sylloge, having sporules $6\text{--}8$ by $2\frac{1}{2}\text{--}3\mu$, but specimens in Fungi Gallici 135 are the same as the New Jersey specimens; spots concentrically wrinkled, and sporules $15\text{--}20$ by $5\text{--}7\mu$. De Thümen's Mycotheca, 1672, on leaves of *Syringa Chinensis*, does not seem to be a *Phyllosticta*.

PHYLLOSTICTA DESMODII, n. s. On leaves of *Desmodium*, Walworth County, Wis. July, 1888. Dr. J. J. Davis, 47. Spots amphigenous, suborbicular or irregular; $2\text{--}5$ millimeters in diameter; often more or less confluent; dark brown, becoming whitish in the center, at length more or less fissured and cracked. Sporules oblong, elliptical, hyaline, $3\frac{1}{2}\text{--}5$ by $1\frac{1}{2}\text{--}2\mu$.

PHYLLOSTICTA PALMETTO, n. s. On leaves of *Sabal palmetto*, Louisiana, April, 1886. (Langlois, 426 in part.) On the same host at Leland, Miss., April, 1889 (Tracy, 1206). Spots subelliptical $\frac{1}{2}$ to 1 by $\frac{1}{4}$ to $\frac{1}{2}$ centimeter, pallid, with a yellowish shaded border. Perithecia amphigenous, pustuliform, $110\text{--}150\mu$ in diameter, lead colored, of fine cellular structure, with a small round opening in the center. Sporules cylindrical; obtuse 2-3-nucleate, hyaline, $12\text{--}14$ by $2\frac{1}{2}\text{--}3\mu$. The perithecia resemble minute blisters. Probably the spermogonial stage of *Sphaerella sabaligena*, E. & E., with which it was mixed in the Louisiana specimens.

PHYLLOSTICTA DEUTZIAE, n. s. On leaves of *Deutzia* (cult.). Spots amphigenous, light brown or whitish, round, $1\text{--}2$ millimeters in diameter, with raised border on both sides of the leaf. Perithecia lenticular, black, mostly epiphyllous, nearly superficial, $\frac{1}{5}$ millimeter in diameter. Sporules subelliptical, fuscous, $4\text{--}5$ by 3μ .

PHYLLOSTICTA COMMONSI, n. s. On leaves of *Paeony*, Wilmington, Del., June 24, 1889. A. Commons, No. 922. Spots pale yellowish, defi-

nite, 3-4 millimeters in diameter. Sporules oblong or elliptical, smoky hyaline, 4-5 (exceptionally 6-7) by $2-2\frac{1}{2}\mu$. Differs from *P. pæonia*, S. & S., in its definite spots and smaller ($75-80\mu$) perithecia and in its smaller sporules.

MACROPHOMA SUBCONICA, *n. s.* On dead stems of *Solanum nigrum*, St. Martinsville, La., November, 1888. Rev. A. B. Langlois, 1569. Perithecia innate-erumpent, conical, $\frac{1}{2}$ to 1 millimeter high. Sporules elliptical, hyaline, $20-22$ by $14-16\mu$. On slender basidia about as long as the sporules. Also on *Alocasia esculenta*, No. 1576.

PHOMA MEDIA, *n. s.* On dead stems of *Asparagus*, Newfield, N. J., April, 1889. Perithecia occupying an elongated spot 6-8 centimeters long and 1 centimeter wide, large ($\frac{1}{2}$ millimeter), depressed-globose, or slightly oblong, with a distinct papilliform ostiolum which is soon broadly perforated. Sporules fusoid, straight, hyaline, 2-nucleate, acute, about $10-12$ by $2\frac{1}{2}\mu$. *P. asparagi*, Sacc., is on bleached parts of the stem and has smaller obtuse sporules. In this the surface of the stem beneath the leaden-colored epidermis is more or less blackened. *P. lanceolata*, (C. & E.) has the sporules $20-24$ by 5μ .

SPHÆRONEMA CANUM, *n. s.* On dead branches of *Negundo aceroides*, Manhattan, Kans., February, 1889. Kellerman & Swingle, 1318. Perithecia at first covered by the bark, depressed hemispheric, 1 millimeter or over in diameter, with a central, cylindrical, stout, straight, black beak about 1 millimeter high with a slightly enlarged, subovate, gray, strigose head. Sporules ovate-oblong or ovate-elliptical, nucleate, hyaline, $7-10$ by $3-4\mu$, on cylindrical basidia $15-20$ by 2μ , and forming a compact, whitish horn-colored stratum within the perithecia. The general appearance of the fungus is much like that of *Stilbum giganteum*, Pk., or perhaps resembles more closely *Sphæronema pruinosum*, Pk., but this is quite distinct from either of those species.

HAPLOSPORELLA EUONYMI, *n. s.* On dead limbs of *Euonymus atropurpureus*, Lincoln, Nebr., March, 1889; H. J. Webber. Stromata scattered or seriate, erumpent, and loosely surrounded by the ruptured epidermis, hemispheric or oblong, 1-2 millimeters in diameter, subtruncate, and finally whitish above. Perithecia entirely inclosed in the stroma, with thin subevanescent walls, and appearing on a cross-section more like cells than like perithecia; ostiola obscurely papilliform. Sporules oblong, obtuse, very slightly narrowed in the middle (possibly becoming 1-septate), $10-14$ by $6-8\mu$, brown, on slender basidia, $70-80\mu$, long. On the smaller twigs the stromata are smaller, but the sporules larger, $18-22$ by $10-12\mu$. *Sphæropsis valsoidea*, (C. & E.) has exactly the same structure and should be *Haplosporella valsoidea*, C. & E.

HAPLOSPORELLA AILANTHI, *n. s.* On dead *Ailanthus glandulosus*, Lyndonville, N. Y., May, 1889; Dr. C. E. Fairman, 61. Perithecia large ($\frac{3}{4}$ millimeter); aggregate cespitose, buried in the bark and connected by an imperfect stroma, subseriately erumpent. Sporules ovate or elliptical, dark brown, $18-22$ by $8-10\mu$, filled with white grumose matter.

ASCOCHYTA SILENES, *n. s.* On leaves and stems of *Silene antirrhina*, Racine, Wis. June 1888, Dr. J. J. Davis, 23, and on the same host collected by Mr. F. W. Anderson (No. 350) in Montana. Spots pale yellowish, the entire leaf finally assuming the same color, the spots which are then hardly discernible becoming paler. Perithecia erumpent discoid, 120–150 μ in diameter, broadly pierced above, not confined to the spots but scattered over the entire leaf. Sporules oblong, hyaline, 2–3 nucleate, rounded at the ends 10–14 by 2½–3 μ . In the Wisconsin specimens *Septoria saponariae*, (D C.) occurs also on the same leaves, but may be distinguished with the naked eye by its paler perithecia. This differs from *Phyllosticta nebulosa*, Sacc., in its larger scattered perithecia and larger sporules. The specimens of *P. nebulosa* in Saccardo's Mycotheca Veneta (in our copy) are a *Sphaerella* with clavate-oblong, inequilateral 35 by 15 μ asci and crowded, oblong-fusoid 1-septate 12–15 by 3–3½ μ sporidia.

ASCOCHYTA? INFUSCANS, *n. s.* On leaves of *Ranunculus (abortivus?)*, London, Canada, July 18, 1889; J. Dearness, 256. On large, dark brown, indefinitely limited areas of the leaf, causing faintly zonate indefinite spots, in which are buried the brown perithecia, slightly raising the surface of the leaf in a pustuliform manner. Sporules oblong, hyaline, obtuse, narrowed in the middle, with two large nuclei 10–15 by 4–6 μ (becoming uniseptate?).

ASCOCHYTA THASPII, *n. s.* On leaves of *Thaspium barbinode*, London, Canada, August, 1889; J. Dearness, 511. Spots amphigenous, suborbicular, dirty brown, with definite margin, surrounded by a narrow yellow border, about 1½ centimeters in diameter. Perithecia innate, pale, 100–120 μ in diameter, entirely buried in the substance of the leaf and scarcely visible. Sporules cylindrical 1-septate (3–4 nucleate), 25–30 by 6–8 μ , ends rounded and obtuse.

ASCOCHYTA ALISMATIS, *n. s.* On leaves of *Alisma plantago*, London, Canada, August, 1889; J. Dearness, 512. Spots amphigenous, round, small (1–2 millimeters), dirty brown, whitish in the center, surrounded by a faint yellowish discoloration. Perithecia innate, pale, 80–100 μ , with a broad opening above. Sporules oblong cylindrical, 12–16 by 2½–3 μ , 2-nucleate becoming 1-septate.

ASCOCHYTA CORNICOLA, Sacc. This seems to be quite variable in the size of the sporules. Saccardo says 7–10 by 3½–4 μ . Specimens on leaves of *Cornus sericea* sent from Wisconsin by Dr. J. J. Davis have sporules 7–11 by 5–6 μ . Specimens from Ohio sent by Professor Morgan have sporules 10–15 by 3½–4 μ . *Phyllosticta cornicola* does not differ in any respect, except that the sporules are not septate, and is probably a less perfectly developed state of *Ascochyta cornicola*.

ASTEROMA RIBICOLUM, *n. s.* On living leaves of *Ribes floribundum*, Helena, Mont., August, 1888; Rev. F. D. Kelsey, No. 210. Epiphyllous. Fibrils branching and radiating from a central point, forming

dark-colored orbicular spots 1 centimeter or more in diameter. The lower surface of the leaf opposite is also of a darker color. The fibrils are closely appressed, and except towards their vanishing extremities are thickly covered with the minute black sterile perithecia.

CONIOTHYRIUM CEPHALANTHI, *n. s.* On living leaves of *Cephalanthus*, Bayou Chene, La., October, 1888; Langlois, 1532. Spots large, sub-orbicular, or irregular; grayish-brown above, rusty brown below; often subconfluent over a large part of the leaf, all more or less distinctly concentrically zoned. Perithecia hypophyllous, minute, abundant, erumpent, black. Sporules brown, continuous, globose, 4-5 μ in diameter, or ovate, 4-5 by 3-3½ μ .

SPHÆROPSIS SMILACIS, *n. s.* On dead stems of *Smilax hispida*, Lincoln, Nebr., November, 1888. H. J. Webber, 34. Perithecia scattered, buried in the substance of the bark, bursting the cuticle, but only partially erumpent. Sporules oblong, brown, obtuse, 15-20 by 6-8 μ .

SPHÆROPSIS CLADONIÆ, *n. s.* On apothecia of *Cladonia cariosa*, Emma, Mo., March, 1889. Rev. C. H. Demetrio. Perithecia minute, about ⅙ millimeter in diameter, and a little more than that in height, obconic-cylindrical, subtruncate above. Sporules globose, or obovate-globose, yellowish-brown, about 3 μ in diameter, on stout basidia about 6 by 2 μ . Differs from *S. parasitans*, B. & Rav., in its differently shaped smaller perithecia and sporules.

HENDERSONIA HETEROPHRAGMIA, *n. s.* On dead twigs of *Sarcobatus vermiculatus*. Near Great Falls, Mont., July, 1889. F. W. Anderson, 541. Perithecia erumpent, superficial, subseriate, globose, collapsing, ¾ millimeter in diameter. Ostiolum papilliform. Sporules elliptical or oblong elliptical, brown, 1-3-septate 12-16 by 5-7 μ .

HENDERSONIA CONCENTRICA, *n. s.* On living leaves of *Rhododendron catawbiense*, Roan Mountain, North Carolina, July, 1889. Prof. F. L. Scribner. Spots exactly as in *Pestalozzia concentrica*, B. & C., marginal, 1-2 centimeter in diameter, variegated with alternate lighter and darker zones, margin definite, but not raised. Sporules fusoid-oblong, pale-brown, 3-septate, 12-15 by 3 μ , on slender basidia 20-30 μ long. Acervuli mostly erumpent above, black. On *Rhododendron maximum* from the same locality, the fungus occurred on large dead areas of the leaf, and the concentric zones were scarcely discernible.

HENDERSONIA DAVISII, *n. s.* On partly dead leaves of *Carya alba*, Racine, Wis., August, 1888. Dr. J. J. Davis, 10. Spots large, occupying the entire upper half of the leaf, dark brown. Perithecia mostly epiphyllous, gregarious, black, erumpent ⅙ to ⅕ millimeter in diameter soon more or less buried by the exuding obovate-oblong, pale, olivaceous-black, 3-septate, 10-12 by 3-3½ μ , sporules.

SEPTORIA LATHYRI, *n. s.* On dead leaves of *Lathyrus latifolius* (cult.), "Everlasting Pea," Newfield, N. J., March, 1889. Perithecia amphigenous, gregarious, prominent, mostly in groups, 2-4 millimeters

across; the leaf in these parts being slightly blackened. Sporules spiculiform, attenuated to a point at one end and subtruncate at the other, faintly nucleolate, 20–30 by $1\frac{1}{4}\mu$, mostly less than 25μ long. Differs from any of the four species on *Lathyrus* in the Sylloge in its shorter, spiculate sporules. *Septoria viciae*, West, also has longer and thicker sporules. The general appearance is that of an erumpent *Sphaerella*. Perhaps the spermogonia of *Sphaerella lathyrina*, B. & C.

SEPTORIA INTERMEDIA, *n. s.* On *Solidago (juncea?)*, Racine, Wis., June, 1888 (Davis No. 25). Spots small (1 millimeter), scattered, subconfluent dull-white, with a dark purple shaded border. Sporules nearly straight, hyaline, nucleolate 15–25 by $1-1\frac{1}{2}\mu$. Has the general appearance of *Septoria atropurpurea*, Pk., but is distinguished by its much shorter spores as well as different host.

SEPTORIA PHYSOSTEGIAE, *n. s.* On leaves of *Physostegia Virginiana*, Racine, Wis., September, 1888. Dr. J. J. Davis, 4. Spots amphigenous, small (1 millimeter), dirty white, with a shaded purplish border. Sometimes several of the small white spots are included in a larger brown spot. Sporules filiform, nearly straight, 20–27 by $1-1\frac{1}{4}\mu$. *S. brunella*, Ell. & Holw. is on larger rusty brown spots and has longer sporules.

SEPTORIA ASTERICOLA, *n. s.* On *Aster cordifolius*, Magnolia, Mass. Miss Clarke; Delaware, Commons, 723 and 724; Wisconsin, Davis. Spots amphigenous, dark brown, subindefinitely limited, bounded by a broad yellow border, the brown central part 3–4 millimeters across. Perithecia innate, finally partially erumpent above, numerous, scattered, small (75μ), scarcely visible in the earlier stages of growth, light brown. Sporules slender, nearly straight, nucleate, 30–45 by $1-1\frac{1}{4}\mu$. Differs from *S. atropurpurea*, Pk. in its yellow bordered spots and shorter, narrower sporules.

SEPTORIA PRENANTHIS, *n. s.* On leaves of *Prenanthes*, Racine, Wis., August, 1888, Dr. J. J. Davis, 20. Spots scattered, suborbicular, dull white, with a purple border 2–3 millimeters in diameter, thin. Perithecia amphigenous, scattered on the spots, suberumpent, yellowish. Sporules filiform, slightly curved, continuous, 15–22 by $1-1\frac{1}{4}\mu$.

SEPTORIA ASCLEPIADICOLA. Jour. Mycol., IV, p. 44. The sporules are mostly only $1\frac{1}{2}\mu$ thick instead of $2-2\frac{1}{2}\mu$. The same thing has been sent from Missouri on *Asclepias rubra*, Demetrio, 215.

SEPTORIA COMMONSII, *n. s.* On leaves of *Cnicus altissimus*, Faulkland, Del., August, 1885. A. Commons, 137. Spots dark brown with a whitish center, round, 2–4 millimeters diameter, obscured below by the tomentum of the leaf. Perithecia epiphyllous, minute, clustered, black, subprominent. Sporules subspiculate, slightly curved, continuous, nucleolate, 25–40 by $1-1\frac{1}{4}\mu$. *S. cirsii*, Niessl., is said to have sporules 40–80 by $1\frac{1}{2}-2\mu$ and 8–12-septate. The specimens labeled *S. cirsii*, Niessl., in De Thümen's Austrian Fungi, 690, which are sterile, have the spots concentrically marked and have no white center.

SEPTORIA DEARNESSII, *n. s.* On *Archangelica atropurpurea*, London, Canada, August, 1889. Mr. J. Dearness, 552. Spots amphigenous, dark brown, irregular, angular, 1-5 millimeters in diameter. Perithecia innate, minute, slightly prominent, very obscure. Sporules issuing in white cirrhi, 15-22 by $1\frac{1}{2}\mu$, without nuclei or septa, nearly straight. Approaches *Cylindrosporium* on account of the imperfectly developed perithecia.

SEPTORIA DIVARICATA, *n. s.* On living leaves of *Phlox divaricata*, Lyndonville, N. Y., May, 1889. Dr. C. E. Fairman, 44. This is the *Septoria phlogis*, S. & S. ? in Journ. Mycol., III, p. 85. The Lyndonville specimens agree exactly with the Iowa specimens so that there is reason to think this is not an immature state of *S. phlogis*, S. & S., but a different thing. In fact it differs throughout from the description of that species. The spots are not white, only whitish, and the sporules instead of being 40-60 by $1-2\mu$ and 1-3-septate are 15-35 by 1μ , mostly 20-25 μ long, nearly straight instead of flexuous, and very faintly nucleolate but not septate.

SEPTORIA FAIRMANI, *n. s.* On living leaves of Hollyhock (*Althæa rosea*), Lyndonville, N. Y., June, 1889. Dr. C. E. Fairman, 77. Spots amphigenous, scattered, subangular, 3-4 millimeters in diameter, dark brown and limited in part by the veinlets, border narrow and dark. Perithecia epiphyllous, rather numerous, scattered quite evenly over the spots, black, 100-112 μ , subprominent. Sporules filiform, slightly curved, nucleate, 30-45 by $1\frac{1}{2}-2\mu$, hyaline. Whether *S. althææ*, Thüm., is different from this it is impossible to tell, as the specimen in his Austrian Fungi, 955, is a *Cercospora*. He says of this (F. Aust., 955) "perithecia arranged in a circle on dry pale brown spots," which applies very well to his specimen. Apparently De Thümen mistook the tufts of *Cercospora* for perithecia. In Dr. Fairman's specimen the spots are dark brown. *S. lachastreana*, Sacc. & Let. has the sporules 3-septate, and the perithecia are smaller and on minute whitened spots. On the same leaves is a *Phyllosticta* with oblong 3-4 by $1\frac{1}{2}-2\mu$ sporules, on white deciduous spots of about the same size as those producing the *Septoria*. The *Phyllosticta* agrees with *P. althæina*, Sacc., only the sporules are smaller.

SEPTORIA CRYPTOTÆNIÆ, Ell. & Rau. ? J. M., III, p. 50. Specimens collected in Delaware by Mr. Commons (910) enable us to add the following notes: Spots white, becoming brown, angular, limited by the veinlets. Perithecia epiphyllous, erumpent, black, depressed-globose, 100-120 μ , scarcely visible below. Sporules filiform, yellowish, attenuated towards each end, faintly nucleolate, slightly curved 20-30 by $1\frac{1}{4}-1\frac{1}{2}\mu$. The leaf turns yellow around the spots. Perithecia not abundant. This is closely allied to *S. ægopodina*, Sacc., which, however, has smaller perithecia. It is certainly very different from the specimen labeled *Septoria ægopodina*, Sacc. in Fungi Gallici, 1317. From *S. saniculæ*, E. & E. (J. M., IV, 44) it differs in its larger spots, perithecia, and sporules.

SEPTORIA CONVULVULI, Desm. Prof. Hitchcock sends this from Iowa on *Calystegia sepium*. It is distinguished from *S. calystegiae*, Desm. and *S. flagellaris*, E. & E. by its more numerous perithecia and larger spots, and from the latter also by its shorter ($20-35\mu$) sporules.

SPHÆRONEMELLA CARNEA, n. s. On ash bark, Lake Skaneateles, New York, July, 1872. Rev. J. L. Zabriskie, 119. Perithecia gregarious, erumpent, flesh-colored, subulate, 2 millimeters long, swollen at the base, which contains the sporigenous nucleus. Sporules oblong, hyaline, continuous, about 15 by 4μ , rounded at the ends.

SPHÆRONEMELLA ROSÆ, n. s. On dead twigs and old calyx tubes of *Rosa lucida*, Newfield, N. J., June, 1889. Perithecia erumpent, membranaceous, ovate, yellowish, becoming black, about $\frac{1}{5}$ millimeter in diameter; narrowed above into a short, cylindrical, membranaceous, pale ostium, crowned with spherical yellow globule of exuded, narrow, elliptical, hyaline, continuous, $4\frac{1}{2}-5\frac{1}{2}$ by $2\frac{1}{2}-3\mu$ sporules. The perithecia are loosely bordered by the ruptured epidermis and white inside from the mass of sporules. This approaches *Cytispora*, but the perithecia are simple.

ASTERINULA nov. gen. of **SPHÆROPSIDÆ** Fam. **LEPTOSTROMACEÆ**.

Perithecia dimidiate, scutelliform, submembranaceous, radiate-cellulose; sporules ovoid or oblong, 1-septate, hyaline. Differs from *Lepthyrium* in its uniseptate sporules, from *Asterina* in the absence of asci, and from *Ascochyta* in its superficial perithecia.

ASTERINULA LANGLOISII, n. s. On living leaves of *Magnolia grandiflora*, Louisiana, January, 1889. Rev. A. B. Langlois, 1656. Hypophyllous. Perithecia scattered or gregarious, not on any definite spots, dimidiate, superficial, radiate, cellulose, pierced above, $100-112\mu$ in diameter mostly with a short fringe of brown mycelium around the margin. Sporules oblong or obovate-oblong 2-nucleate, becoming 1-septate, hyaline, $18-22$ by $7-8\mu$, ends rounded and obtuse. Probably the spermogonial stage of some *Asterina*.

DIPLODINA RAMULORUM, n. s. On bleached stems of *Smilax* and *Lycium*, Newfield, N. J. Perithecia subcuticular, black, minute, gregarious. Sporules oblong, elliptical, smoky hyaline, 1-septate, $5-8$ by $2-3\mu$.

DISCULA XANTHOXYLI, n. s. On dead stems of *Xanthoxylum*, St. Martinsville, La., January, 1889. Rev. A. B. Langlois, 1600. Perithecia gregarious, on bleached spots 2-3 centimeters long by $\frac{1}{2}$ centimeter broad, subdiscoid, about 150μ in diameter, of rather coarse cellular texture, with a small circular opening above. Immediately around this opening the perithecium is more compact and nearly opaque, but around this dark center it is thinner and translucent. Sporules abundant, oblong-cylindrical, hyaline, continuous, $12-20$ by $3-3\frac{1}{2}\mu$, arising directly from the cells of the proligerous layer, which are some-

times elongated and even imperfectly branched so as to form rudimentary basidia.

DISCULA RUNCINATA, *n. s.* On dead stems of *Stephanomeria runcinata*, Helena, Mont., January, 1889; Rev. F. D. Kelsey, 133. Gregarious or scattered, covered at first by the epidermis and then convex and closed, soon erumpent, and the upper part of the perithecia disappearing, leaving a broad opening above; of coarse cellular texture, $150\text{--}200\mu$ in diameter. Sporules hyaline, continuous, oblong, curved, generally more strongly so at one end, $18\text{--}23$ by $3\frac{1}{2}\text{--}4\mu$. The sporules and the perithecia also are those of a *Vermicularia*, only the hairs or bristles are wanting.

DISCELLA PILOSULA, *n. s.* On a decorticated maple, Lyndonville, N. Y., April, 1889, Dr. C. E. Fairman. Perithecia gregarious, ovate $\frac{1}{3}$ to $\frac{1}{2}$ millimeter in diameter, erumpent, superficial, black, rough, and sparingly clothed with short, spreading, pale, glandular hairs intermixed with a few black bristle-like hairs, at first closed, then with a broad opening above, the margin sublacerate dentate or subfimbriate. Texture of the perithecia subfibrous. Sporules cylindrical, curved, 3-6-nucleate and either continuous or faintly 1-septate, brownish-hyaline, $10\text{--}16$ by $2\text{--}2\frac{1}{2}\mu$, the ends mostly abruptly mucronate-pointed and incurved. Basidia slender, simple, or sometimes branched, $25\text{--}30\mu$ long. This would come better under *Amerosporium* but for the 1-septate sporules. The septum was only observed in the larger and more mature sporules and was then very faint, but there is no doubt of its presence, nor is it unlikely that after the specimens have lain in the herbarium a few years they may become three or more septate.

SPORONEMA PALLIDUM, *n. s.* On bleached spots on bare decaying wood of maple, Ridgeway, N. Y., May, 1889, Dr. C. E. Fairman, 58. Perithecia gregarious, erumpent, cespitose, $\frac{1}{2}$ millimeter in diameter, multiradiate-cleft above or after the laciniae have disappeared, irregularly lacerate-cleft; at first closed. Sporules concatenate, 8-10 by 2μ , sub-cylindrical, hyaline, formed by constriction of the sporogenous filaments.

GLÆOSPORIUM REVOLUTUM, *n. s.* On living leaves of *Robinia pseudacacia*, Newfield, N. J., August, 1889. Mostly on leaves of the terminal shoots. The margin of the leaf becomes yellowish green and revolute, then brown and dead. The oblong $12\text{--}15$ by $3\text{--}4\frac{1}{2}\mu$ spores begin to ooze out from the buried acervuli as the affected part begins to turn brown, soon becoming confluent and forming a flesh-colored coating on the surface of the leaf. In the early stage of growth the fungus has the aspect of a *Taphrina*.

GLÆOSPORIUM CANADENSE, *n. s.* On living leaves of white oak, London, Canada, July, 1889; J. Dearness, 193. Spots amphigenous, irregular, subrotund, about $\frac{1}{2}$ centimeter in diameter, pale rusty brown in the center, with a broad dirty brown border and tolerably definite margin above, more indefinite below. Acervuli scattered, be-

coming dark, 180–200 μ in diameter. Mostly erumpent above. Spores ovate-oblong, hyaline 10–14 by 3½–4½ μ . Possibly not distinct from *G. umbrinellum*, B. & Br., but that is said to have the spots “minute.”

GLÆOSPORIUM HYSTERIOIDES, *n. s.* On orange leaves, Florida, 1886; Dr. George Martin. Spots large, mostly marginal, yellowish at first, then cinereous, and finally dirty white, border yellow, broad, and slightly elevated. Acervuli erumpent, black hysteriiform. Spores oblong, 12–15 by 3½–5 μ , not curved, basidia shorter than the spores. Spots 1–2 centimeters across, often extending along the margin of the leaf. Differs from *G. sphaerelloides*, Sacc., in its short basidia and from *G. hesperidearum* in its definite spots.

GLÆOSPORIUM RAMOSUM, *n. s.* On leaves and stems of *Polygala polygama*, Newfield, N. J., June, 1889. Parts of the leaf at first turn dark purple and on these discolored places appear small, circular yellowish-white spots about 1 millimeter in diameter. In these spots are seated the innate acervuli, generally only one at first in the center of the spot, finally 2–4, slightly prominent and black above, appearing like the erumpent apex of a small perithecium, but the oblong-cylindrical, slightly curved, obtusely pointed, granular, continuous, 12–22 by 3–3½ μ spores, on thick branching basidia, about as long as the spores themselves, are discharged below. This differs from the other species of *Glæosporium* in its branched basidia which much resemble the spores themselves. The fungus is very destructive to the plants, all the leaves soon turning pale-yellowish and falling off.

GLÆOSPORIUM (MARSONIA) BRUNNEUM, *n. s.* On leaves of *Populus candicans*, Newfield, N. J., August, 1889. Leaf mottled above with small black spots which soon become confluent in large areas, especially around the margin, the entire lower surface of the leaf soon assuming a uniform bronze-brown color. Acervuli 1–3 in each of the minute black spots, pale, erumpent on both sides of the leaf, finally nearly black. Conidia clavate obpyriform, hyaline, 1-septate below the middle, 14–16 by 5–7 μ . On account of the smaller conidia and different habit this seems sufficiently distinct from *G. populi* and *G. castagnei*. There are no well defined spots, only the small black specks soon confluent and blackening finally the greater part of the leaf.

GLÆOSPORIUM (MARSONIA) GRAMINICOLUM, *n. s.* On living leaves of grasses, London, Canada, August, 1889. J. Dearness, 341. Spots amphigenous, black, subindefinite, 2–3 millimeters, becoming white in the center from the erumpent spores. Acervuli minute, buried, cirrhi white, minute. Spores cylindrical, 1-septate, 15–22 by 3–4 μ hyaline. The leaf is slightly thickened at the spots.

PHLEOSPORA ACERIS, (Lib.). On leaves of *Acer dasycarpum*, Manhattan, Kans., July, 1887. W. T. Swingle. Dr. Winter has issued this in his Exsicc. (3480) under this name (see also N. A. F. Cent., XXIII). *Glæosporium acerinum*, Pass. in De Thümen's Mycotheca (93)

differs only in its rather shorter spores, which are also more distinctly thickened at one end. In both they are 3-septate.

GLÆOSPORIUM (SEPTOGLÆUM) AMPELOPSIDIS, *n. s.* On fading leaves of *Ampelopsis quinquefolia*, Racine, Wis., September, 1888, Dr. J. J. Davis, 69. Spots amphigenous, angular, limited by the veinlets of the leaf, 2-3 millimeters in diameter, greenish. Acervuli erumpent on both sides of the leaf, prominent. Spores clavate-cylindrical, 5-9-septate, 30-35 by $4-4\frac{1}{2}\mu$.

GLÆOSPORIUM LAGENARIUM, Pass. var. MUSARUM, E. & E. On banana rind, Lincoln, Nebr., Roscoe Pound, 23, does not differ essentially from the forms on various species of *Cucurbitaceæ*. A foliicolous form of this species has proved very destructive around Newfield, N. J., this year on water-melon and musk-melon vines.

CYLINDROSPORIUM? OCULATUM, *n. s.* On leaves of *Populus monilifera*, Put-in-Bay, Ohio, August, 1888, Dr. J. J. Davis, 14. Spots amphigenous, round, 3-5 millimeters in diameter, grayish white, with a darker margin and a narrow raised border. Acervuli innate, amphigenous, yellowish (finally blackish), rather large ($\frac{1}{8}$ millimeter). Spores clavate-cylindrical, curved, 30-50 by 3μ nucleate (becoming 3 or more septate).

CYLINDROSPORIUM CLEMATIDIS, E. & E. J. M. III, p. 22. Mr. Galloway sends some leaves of *Clematis Jackmanii* collected at Geneva, N. Y., June 20, 1889, in which the tubercular masses of exuded spores are black, but the spores themselves are hyaline as in the original specimen on *C. Virginiana*. In the Geneva specimen the spots are less distinct and definite, and the acervuli are not confined to the spots, thus differing considerably from the original description. It may, however, be doubted whether the specimens on *C. Jackmanii* are specifically distinct, and we have for the present at least placed them as a variety, *C. clematidis*, E. & E., var. *Jackmanii*.

CYLINDROSPORIUM VIRIDIS, *n. s.* On living leaves of *Fraxinus viridis*, St. Martinsville, La., May, 1889. Langlois, 1712. Spots (on the upper side of the leaf) numerous, dark purple, suborbicular, 3-4 millimeters in diameter, with a subindefinite margin and a small (1 millimeter or less) rusty-brown center. On the lower surface of the leaf the purple color is entirely wanting, only dirty brown 1-2 millimeter subindefinite spots opposite the center of those on the other side. Acervuli innate, 3-6, in or near the center of the spots, prominent below, but opening above and discharging snow white heaps of cylindrical fusoid, 30-35 by $2\frac{1}{2}\mu$, nucleate spores curved nearly to a semicircle. The measurement is from tip to tip as the spores lie curved. Readily distinguished from *C. fraxini*, E. & K., by the purple spots and shorter spores. What appears to be the same, but without fruit, has also been sent from Ohio (Morgan, 405).

CYLINDROSPORIUM SACCHARINUM, *n. s.* On living leaves of *Acer*

saccharinum, Racine, Wis., October, 1888. Dr. J. J. Davis, 59. Spots amphigenous, numerous, scattered, subangular, minute (mostly about 1 millimeter in diameter), greenish black, becoming darker. Acervuli hypophyllous, minute, crowded in the spots, black above, so as to resemble minute perithecia. Spores slender-cylindrical, more or less curved, hyaline, granular, becoming faintly 3-septate, 30–40 by $2\frac{1}{2}$ – 3μ erumpent in small white heaps which soon spread out into a small membranaceous patch like a minute white *Corticium*. This can not easily be mistaken for *Glæosporium aceris*, Cke. or *G. acerinum*, West.

HAINESIA BOREALIS, *n. s.* On *Galium boreale*, Haniloops, British Columbia, July, 1889. Dr. John Macoun, 156. Acervuli hypophyllous, scattered, suborbicular, erumpent, $\frac{1}{2}$ to $\frac{3}{4}$ millimeter in diameter, subgelatinous, yellowish-hyaline, depressed-hemispherical, with a narrow black linear margin formed from the ruptured epidermis of the leaf. Spores suballantoid, 5–7 by 1μ , faintly 2-nucleate, slightly curved, borne on fasciculate, more or less branched basidia, 20–25 by 1μ .

CRYPTOSPORIUM NUBILISUM, *n. s.* On dead or partly dead leaves of *Carex* (*Pennsylvanica*?) Newfield, N. J., 1879. Sent also from Montana by Mr. Anderson (344) on an allied species of *Carex*. Acervuli innate, scarcely erumpent, black, 80–110 μ in diameter, showing by translucence through the epidermis, gregarious in bands across the leaf or seriate. Sporules lunate-fusoid, 15–20 by $2\frac{1}{2}\mu$, hyaline, faintly nucleate.

NÆMASPORA MICROSPERMA, *n. s.* On bark of *Acer saccharinum*, London, Canada, August, 1889. J. Dearness, No. 562. Sporiferous cavities confluent for 1–2 centimeters between the laminae of the bark, purplish-black, the minute, ovate, or elliptical 2– $2\frac{1}{2}$ by $1\frac{1}{2}$ – 2μ spores bursting out in copious cherry-red masses and cirrhi through cracks in the bark. Differs from *C. difformis*, Sz., in its smaller spores on basidia, 12–15 by $1\frac{1}{2}\mu$.

PESTALOTZIA AFFINIS, *n. s.* On fallen leaves of "Japan Chestnut," Lafayette, La. Acervuli innate, erumpent, on both sides of the leaf, but more abundant below. Spores acutely elliptical, pale, 15 by 5μ (about 12μ) between the extreme septa, 4-septate, with a single oblique bristle about 7μ long at the apex and borne on a pedicel shorter than the spore. The spores ooze out in small black heaps, which are as usual often subconfluent-diffused. This differs from *P. pallida*, E. & M., in its broader spores and in lacking the prominent septa of that species.

PESTALOTZIA FLAGELLIFERA, *n. s.* On branches of *Comptonia asplenifolia*, killed by fire a few weeks ago, Newfield, N. J., June 10, 1889. Pustules numerous, subcuticular, raising the epidermis into little tuberculiform pustules which become slightly ruptured above and have a dark gray nucleus. Spores abundant, oblong, slightly curved 1-septate, yellowish-hyaline, 9–12 by 3μ , on stout basidia, about as long as the spores with a single long (25–35 μ) undulate, hyaline bristle ris-

ing from one side of the apex. The spores are mostly a little narrower below and more acute.

PESTALOZZIA AQUATICA, *n. s.* On living leaves of *Peltandra Virginica*, Newfield, N. J., August, 1889. Spots amphigenous, chestnut brown $\frac{1}{2}$ to 1 centimeter in diameter, concentrically wrinkled, border narrow, darker, acervuli epiphyllous, erumpent, $\frac{1}{4}$ to $\frac{1}{3}$ millimeter in diameter, black, convex, then concave. Spores obovate, 18–20 by 6–7 μ , 4-septate, end cells hyaline, next to the lower cell subhyaline, two next above dark. Crest of three stout (15–20 by 1 μ) hyaline spreading bristles. What appears to be the same is found also on leaves of *Sarracenia purpurea*.

PESTALOZZIA NERVALIS, *n. s.* On veinlets of living white-oak leaf from which the parenchyma had been eaten away by some larva, Racine, Wis., September, 1888. Dr. J. J. Davis, 3. Acervuli subhysteriiform. Conidia narrow, elliptical or broad, oblong-fusoid, 4-septate, terminal cells hyaline, colored part (3 inner cells) about 14 by 6 μ , lower hyaline cell 8–9 μ , long, oblique bristle at the apex 8–9 μ long.

PESTALOZZIA MAURA, E. & E. J. M. IV, p. 123. Mr. Langlois finds this at St. Martinsville, La., on dead leaves of *Persea Carolinensis* and on leaves of *Quercus virens* and *Q. palustris*, differing from the Florida specimens only in the absence of any spots, the innate erumpent acervuli being scattered irregularly over the leaf and mostly erumpent below. This species is well characterized by its obconic conidia, having the two cells next below the upper hyaline cell almost black.

BLACK SPOT OF ASPARAGUS BERRIES.

By CHARLES E. FAIRMAN.

These berries are of some slight agricultural importance. Thus we read in the report of the U. S. Agricultural Department for 1885, p. 613, "To save seed the stalks should be cut when the former are scarlet and ripe, to be stripped by hand or thrashed off on a cloth or floor, then pounded in a wooden mortar with a wooden pestle to break the outer shells. The seeds are then frequently washed to float away the chaff, dried in the sun and air and stored."

Asparagus berries are liable to a disease which may, for brevity's sake, be called black spot.

This is due (a) to the growth of fungi in the interior of the berry, (b) to growth of fungi on the exterior of the berry.